

San Joaquin Valley Unified Air Pollution Control District

PERMIT UNIT: S-2049-1-1

EXPIRATION DATE: 4/30/2000

EQUIPMENT DESCRIPTION:

A NOMINALLY RATED 48 MW G.T.E. COGENERATION SYSTEM WITH SCR, INCLUDING STEWART AND STEVENSON GE LM-5000 GAS TURBINE GENERATOR, HEAT RECOVERY STEAM GENERATOR, AND INLET AIR ABSORPTION CHILLER AND HEAT EXCHANGER.

Permit Unit Requirements

1. Gas fired turbine engine shall be equipped with combustor steam injection and a selective catalytic reduction (SCR) system utilizing ammonia as the reducing agent. [District NSR Rule] Federally Enforceable Through Title V Permit
2. Gas fired turbine engine shall be equipped with carbon monoxide reactor of sufficient catalyst volume to meet CO and VOC emissions limits.[District NSR Rule] Federally Enforceable Through Title V Permit
3. Gas turbine engine combustor steam injection rate shall be maintained at a steam to fuel ratio which results in compliance with emissions limits, except during periods of startup, shutdown and malfunction as defined in this permit. Only malfunctions as defined in 40 CFR 60 qualify for this exemption. [40 CFR 60.334(c)] Federally Enforceable Through Title V Permit
4. CEM data may be used to determine compliance with emission limits. [District NSR Rule] Federally Enforceable Through Title V Permit
5. Gas turbine combustor steam injection system shall be equipped with continuously recording steam and fuel injection rate monitoring system accurate to within +/- 5%. [District NSR Rule; District Rule 4703,6.2.1; 40 CFR 60.334 (a)] Federally Enforceable Through Title V Permit
6. Gas turbine shall be fired exclusively with PUC regulated natural gas. The gas must have a sulfur content of less than or equal to 0.017% by weight. [40 CFR 60.333 (a)&(b); 60.332(a); Kern County Rule 407] Federally Enforceable Through Title V Permit
7. Startup and shutdown of the gas turbine, as defined in this permit and in 40 CFR Subpart A 60.2, shall not exceed a time period of three hours and one hour, respectively, per occurrence. Emission concentrations subsequent to this startup period shall not exceed the limits specified in this permit except during shutdown. [40 CFR Subpart A 60.2] Federally Enforceable Through Title V Permit
8. Operations during periods of startup and shutdown shall not constitute representative conditions for the purpose of a performance test, nor shall emissions in excess of the level of the emission limit shown in this permit during periods of startup or shutdown be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard. [40 CFR 60.8(c)] Federally Enforceable Through Title V Permit
9. Inlet gas temperature to catalyst bed shall be maintained within the range recommended by manufacturer except during periods of startup and shutdown as defined herein. [District NSR Rule] Federally Enforceable Through Title V Permit

10. All gas turbine engine exhaust shall flow through catalyst bed. [District NSR Rule] Federally Enforceable Through Title V Permit

11. When catalyst inlet temperature exceeds 800 degrees F, the VOC emission concentration at turbine exhaust shall not exceed 0.6 ppmv dry at 15% O₂, except during periods of startup and shutdown as defined in 40 CFR 60, Subpart A. [District NSR Rule] Federally Enforceable Through Title V Permit

12. VOC emissions, total for the gas turbine exhaust and lube oil vents, shall not exceed 1.04 lb/hr except during periods of startup and shutdown, and shall not exceed 25.0 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit

13. Emission rate from the gas turbine exhaust shall not exceed the following: PM₁₀: 75.0 lb/day, NO_x (as NO₂): 143.7 lb/day, SO_x (as SO₂): 7.2 lb/day, and CO: 252.6 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit

14. Emissions concentration of nitrogen oxides (as NO₂) at the exhaust stack shall not exceed 3.6 ppmv dry calculated to 15% O₂, except during periods of startup and shutdown. [District NSR Rule; 4703, 5.1; and 40 CFR Part 60.332(a)] Federally Enforceable Through Title V Permit

15. Emissions concentration of carbon monoxide (CO) at the exhaust stack shall not exceed 10 ppmv dry calculated to 15% O₂, except during periods of startup and shutdown. [District NSR Rule] Federally Enforceable Through Title V Permit

16. Total particulate matter (PM) emissions from the gas turbine exhaust shall not exceed 0.1 gr/dscf. [District Rule 4201; Kern County Rule 404] Federally Enforceable Through Title V Permit

17. The circular cross section exhaust stack (after SCR unit) shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and equipped with flow straighteners, if necessary, to minimize turbulence. The facility shall comply with this and all applicable compliance testing procedures described in District Rule 1081 (amended December 17, 1992). [District NSR Rule; District Rule 4703; District Rule 1081; Kern County Rule 108.1] Federally Enforceable Through Title V Permit

18. Permittee shall report the following emissions to the District: Emission rate of NO_x and CO on a three hour average, and daily emissions of NO_x and CO. [District NSR Rule] Federally Enforceable Through Title V Permit

19. The concentration of nitrogen oxides (NO_x) from the gas turbine exhaust shall be determined using EPA Method 7E or 20, and oxygen (O₂) concentration shall be determined using EPA Method 3, 3A, or 20. Carbon monoxide (CO) emissions shall be determined using EPA Test Methods 10 or 10B. Source test results will be provided to the district annually. District approved alternative test methods may also be used to address the source testing requirements of this permit. [District Rule 1081; District Rule 2520, 9.4 and 9.5; District Rule 4703, 5.1 & 6.4; 40 CFR Subpart GG 60.335(b) & (c); 40 CFR Subpart A 60.8] Federally Enforceable Through Title V Permit

20. Unfired heat recovery steam generator turbine exhaust shall be equipped with continuously recording emissions monitors for NO_x, CO, and O₂. The continuous NO_x monitoring system shall meet the performance specification requirements in 40 CFR 60, Appendix F, 40 CFR 51, Appendix P, and Part 60, Appendix B, or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District NSR Rule; District Rule 4703; District Rule 1080; Kern County Rule 108; 40 CFR Part 60] Federally Enforceable Through Title V Permit

21. The facility shall comply with the applicable requirements for quality assurance testing and maintenance of the CEM equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080, 6.5; 40 CFR Part 60] Federally Enforceable Through Title V Permit

22. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080, 7.2; Kern County Rule 108] Federally Enforceable Through Title V Permit

23. Except for NO_x and CO emission data obtained for compliance demonstration purposes, CEM data shall be averaged in accordance with the requirements specified under 40 CFR Part 60.13. Compliance results for NO_x and CO shall be averaged over a three hour period. [District Rule 4703, 5.0] Federally Enforceable Through Title V Permit

24. Records shall be maintained and shall contain: the occurrence and duration of any startup, shutdown, or malfunction; performance testing, evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system or monitoring device was inoperative, maintenance of any CEM that have been installed pursuant to District Rule 1080; emission measurements, and daily actual local startup and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a) & (b); District Rule 4703; District Rule 1080, 7.3; Kern County Rule 108] Federally Enforceable Through Title V Permit

25. The operator shall maintain on file copies of natural gas bills. [District Rule 2520,9.4.2] Federally Enforceable Through Title V Permit

26. The Operator of the CEM shall submit a written report for each calendar quarter to the APCO. The report is due on the 30th day following the end of the calendar quarter and shall include: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 2520, 9.6.1; District Rule 1080, 8.0; Kern County Rule 108; 40 CFR 60.7(c)] Federally Enforceable Through Title V Permit

27. The operator shall notify the APCO of a violation of any emission standards as indicated by the CEMs within 96 hours of occurrence. The APCO shall be notified within 8 hours after detection of a breakdown in monitoring equipment and 24 hours prior to a planned shut down of monitoring equipment. [District Rule 2520, 9.6.2; District Rule 1080, 9.0 and 10.0; Kern County Rule 108; 40 CFR 60.334(c)] Federally Enforceable Through Title V Permit

28. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: District Rules 1080, sections 4.0, 5.1, 6.5, 7.2, 7.3, 8.0, 9.0, 10.0 (amended December 17, 1992); 1081 (amended December 16,1993); 4201(amended December 17, 1992); 4703 sections 5.0, 5.1, 5.2, 6.2.1, 6.2.2, 6.2.4, 6.3, and 6.4 (amended October 16, 1997); 40 CFR 60.332(a), (b); 60.333(a), (b), (c); and 60.335(a), (b), (c), and (e); 40 CFR Part 64. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

29. Startup and shutdown of the gas turbine, as defined in this permit, in 40 CFR Subpart A 60.2, and in Rule 4703 shall not exceed a time limit of two hours and one hour, respectively, per occurrence. Emission concentrations subsequent to this startup period shall not exceed 9.0 ppmv for NO_x and 200 ppmv for CO except during shutdown. [District Rule 4703] Federally Enforceable Through Title V Permit

30. All permits issued for facilities S-172, S-1118, S-1119, S-1120 and S-2049 are included in Destec's heavy oil central stationary source. [District NSR Rule] Federally Enforceable Through Title V Permit

31. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

32. Unfired heat recovery steam generator shall not be designed for supplementary firing. [District NSR Rule] Federally Enforceable Through Title V Permit
33. Turbine lube oil vent shall be equipped with one pre-separator, one heat exchanger, and one air/oil separator with drain lines to turbine lube oil reservoir. [District NSR Rule] Federally Enforceable Through Title V Permit
34. Turbine lube oil reservoir shall be equipped with a lube oil reservoir demister. [District NSR Rule] Federally Enforceable Through Title V Permit
35. Generator shall be equipped with a lube oil mist eliminator. [District NSR Rule] Federally Enforceable Through Title V Permit
36. Gas turbine exhaust shall be equipped with continuously recording NO_x emission monitor located prior to catalyst. [District NSR Rule] Federally Enforceable Through Title V Permit
37. Gas temperature at SCR catalyst section inlet shall be monitored by operational temperature indicator. [District NSR Rule; District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
38. Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District NSR Rule] Federally Enforceable Through Title V Permit
39. Installed SCR unit shall provide space for additional catalyst if source operation cannot achieve sampling limits. [District NSR Rule] Federally Enforceable Through Title V Permit
40. Ammonia slip shall not exceed 20 ppmv and daily compliance with ammonia slip limit shall be demonstrated by means of the calculation procedure set forth in this operating permit. The "daily compliance" requirement can be met with a daily average slip value as calculated pursuant to condition 41 below. [District Rule 4102]
41. Ammonia slip shall be calculated as: $\text{slip} = (a - (b \times c / 1,000,000)) \times 1,000,000 / b$, where a=ammonia injection rate(lb/hr)/17(lb/lb. mol), b=dry exhaust gas flow rate (lb/hr)/(29(lb/lb. mol), and c=change in measured NO_x concentration ppmv at stack O₂. [District Rule 4102]
42. Audits of monitors shall be conducted semiannually in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District NSR Rule] Federally Enforceable Through Title V Permit
43. Permittee shall monitor and record exhaust gas temperature at oxidation catalyst inlet. [District NSR Rule] Federally Enforceable Through Title V Permit
44. Compliance with fuel gas sulfur limit shall be determined by fuel gas sample analysis by independent testing laboratory taken at time of annual stack gas sampling. Certification of the sulfur content by the gas supplier will be an acceptable alternative for verifying compliance. [District NSR Rule; District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
45. Permittee shall demonstrate compliance with NO_x and CO daily emissions limits by use of CEM data, fuel rate data, and daily hours of operation data. [District NSR Rule; District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
46. A written record of the compliance with NO_x and CO daily emission limits required during periods of startup/shutdown shall be maintained and made available for District inspection for a period of five years. [District NSR Rule; District Rule 2520, 9.5.2] Federally Enforceable Through Title V Permit
47. Compliance with VOC (hourly) and ammonia slip (ppmv) emission limits shall be demonstrated by District witnessed sample collection by independent testing laboratory annually within 60 days prior to

permit anniversary date. Official test results and field data collected shall be submitted to the District within 60 days of testing. CEM data can be used in addition to stack testing to determine compliance with the NO_x and CO concentrations and daily emission limits. [District NSR Rule] Federally Enforceable Through Title V Permit

48. Any lube oil/accumulating vent having visible emissions with an opacity of 5% or greater shall be tested to demonstrate compliance with VOC emissions limit. Official test results/field data shall be submitted within 60 days of testing. [District NSR Rule] Federally Enforceable Through Title V Permit

49. The gas turbine engine shall be equipped with continuously recording fuel gas flowmeter. [District NSR Rule] Federally Enforceable Through Title V Permit

50. All CEM data shall comply with all applicable requirements for compliance assurance monitoring in 40 CFR Part 64. [40 CFR Part 64] Federally Enforceable Through Title V Permit

51. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081, 7.0; Kern County Rule 108.1] Federally Enforceable Through Title V Permit

52. All CEM data, test results, and operating permit data required to comply with the conditions in this permit shall be rounded to the same number of significant digits as the specified limits. [40 CFR 60.14(h)] Federally Enforceable Through Title V Permit

53. Continuous Emissions Monitoring System shall be in place and operating whenever the facility is operating. NO_x emissions in ppmv (as NO₂ corrected to 3% O₂), and O₂ concentrations must be recorded continuously. The 3-hour average emissions rates shall be calculated using the data points required under Section 60.13(b). The records shall include a daily emission rate consisting of a 24-hour emission rate. [District NSR Rule; 40 CFR 60.486 paragraph b, c and d] Federally Enforceable Through Title V Permit